

CALFED Watershed Program - Full Proposal Cover Sheet**Codornices Creek Watershed Restoration Action Plan / 0148**

1. Full Proposal Title: **Codornices Creek Watershed Restoration Action Plan**
 Concept Proposal Title/Number: **Codornices Creek Watershed Restoration Action Plan/0148**
 Applicant: **Urban Creeks Council**
 Applicant Name: **Bill Kier**
 Applicant Mailing Address: **207 Second Street, Ste. B., Sausalito, CA 94965**
 Applicant Telephone: **415/331-4505** Applicant Fax: **415/332-8799** Applicant Email: **wkier@pacbell.net**
 Fiscal Agent Name (if different from above): **Urban Creeks Council**
 Fiscal Agent Mailing Address: **1250 Addison Street, Ste. 107**
 Fisc Agt Tele: **510/540-6669** Fisc Agt Fax: **510/848-2219** Fisc Agt Email: **UCC_berkeley@hotmail.com**
2. Type of Project: Indicate the primary topic for which you are applying (check only one)

☒ Assessment☐ Monitoring

3. Type of Applicant:

☐ Academic Institution/University☒ Non-Profit

4. Location (including County):

☒ Bay-Delta (Alameda)☐ Southern CA (Coast and Sierra Ranges)☐ Tulare Basin (Coast, Sierra and Tehachapi Ranges)

5. Amount of funding requested: **\$ 200,000**

Cost share/in-kind partners? ☒ Yes ☐ No

Identify partners and amount contributed by each:

Urban Creeks Council)	
Live Oak Codornices Creek Neighborhood Assn)	\$27,000
Friends of Five Creeks)	
University of California, Dept. of Integrative Biology)	\$23,000

6. Have you received funding from CALFED before? ☐ Yes ☒ No

By signing below, the applicant declares the following:

1. The truthfulness of all representations in their proposal
2. The individual signing this form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or an organization)
3. The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the Watershed Program Proposal Solicitation Package and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent provided in the Proposal Solicitation Package.

William M. Kier

Printed name of applicant

William M. Kier

Signature of applicant

1. Project Summary

Codornices Creek begins near the western edge of Tilden Regional Park in the heavily-urbanized hills of Berkeley and tumbles downhill nearly seven miles before entering San Francisco Bay just north of the Golden Gate Fields racetrack [see figure 1]. The upper reaches of the stream are in the backyards of homes, some nearly 100 years old. The lower reaches were paved over, much of them during the frenzied industrial mobilization for World War II. One can conclude that for most of the past century Codornices Creek, like so many tributaries to our "Urbanized Estuary", has been unvalued, if not downright trashed.

The redevelopment of Berkeley's industrialized "flats" began a little over 20 years ago. One warehouse conversion discussion in the mid-1980s gave the City of Berkeley the opportunity to explore "daylighting" of a lower reach of Codornices Creek with the developer/applicant. That daylighting opportunity led to others, most involving a significant amount of volunteer back-power, which led to the evolution of stream restoration and protection groups like the Urban Creeks Council, the Friends of Five Creeks, and the Live Oak Codornices Creek Neighborhood Association. Berkeley was developing a national reputation as a community that values and restores its streams.

As the first of the daylighted sites began to sprout canopies of alders and other native vegetation, stream-watchers began to see large salmonid-like fish in lower Codornices Creek during the winter. EPA Bay Area streams expert Rob Leidy saw what looked like a very large trout, or a steelhead, in the creek below the BART tracks in the early 1990s. University of California researcher Dr. Tom Dudley electro-fished the middle reaches of Codornices Creek in March, 2000, and recovered handfuls of young-of-the-year salmonids. Steelhead?

By fall, 2000, the neighborhood and creek watch groups realized that they had a "totem" for all their hard work. They weren't struggling just to clean up Codornices Creek water quality, or to restore wildflowers to its banks, or to create streamside mobility for their disabled neighbors. They were, conceivably, recreating steelhead habitat!

This spring the University of California and the California Coastal Conservancy are poised to announce a \$1 million project of Codornices Creek restoration at University Village. The Village was constructed hastily at the outbreak of World War II to billet officer candidates studying at the University. Codornices Creek was pushed unceremoniously aside and left to find its way through culverts and lined ditches from San Pablo Boulevard to the railroad tracks below. The Coastal Conservancy/University project will be the most ambitious stream restoration project in Berkeley's history.

Amateur surveys of Codornices Creek have identified a number of places that need attention before steelhead can move up and down the stream, or benefit from its streambed quality, with any annual certainty. There are old, hanging culverts that can block migrating steelhead except during the heaviest winter flows. There are streambanks that are sloughing their sediment, filling pools and smothering the stream's rocky substrate.

There are, in fact, so many places along the five or so miles of open stream that can limit steelhead access, spawning, and rearing, that the community groups have come

together in this proposal to conduct a professional assessment of the extent and quality of Codornices Creek's salmonid habitat; to assess its water quality during critical salmonid life-cycle periods; to document the nature and potential cost of the structural "fixes" needed to assure upstream- and downstream steelhead access; to consult with property owners concerning their willingness to provide access to stream surveyors and, later, to discuss fixes on their property; and to do all this in the context of a sustained campaign to inform the neighbors and City Hall about the stream and this project, and to interest all in the welfare of the creek and its salmonid denizens. And to corral all the existing and new information concerning the creek's health and its steelhead habitat into an easily-accessed, user-friendly watershed information management program.

The proposed project tasks are these:

1. Administration of the project
2. Assessment of the stream's habitat, habitat potential, and its water quality
3. Assessment of barriers and unstable bank sites, determine fixes and costs
4. Conduct a program of close community outreach and watershed education
5. Report project progress and results to CALFED and its partners

1. The Urban Creeks Council is a non-profit public benefit corporation with a proven record of grant administration and performance. UCC will serve as the project's fiscal agent and UCC's staff will be responsible for performing project task 4 [community outreach] and will participate in the performance of task 5 [reporting], as well.

The target dates for the performance of the task 1 subtasks, beginning with the creation of project fiscal spreadsheets and preparation of the subcontract agreement in month 1, through dissemination of the watershed information system during the last year of the 20-month project, are shown in detail on the Budget and Project Summary sheet.

2. Some analysis of Codornices Creek water quality, using a variety of equipment and methods has already been performed by the Friends of Five Creeks [FFC], with encouragement from the U.S. Environmental Protection Agency. A principal concern of this sampling has been evidence of sewage leaks, which are common along some reaches of the creek. A number of *ad hoc* studies of the stream have been conducted over the years by University students. The Regional Water Quality Control Board is understandably concerned by the likely presence of diazanon, the organophosphate pesticide so common to urbanized watersheds.

Task 2 involves assessment of both physical and chemical fish habitat parameters. CALFED's Watershed Program is actively seeking watershed assessment methods that might be regarded as effective by watershed residents, practitioners, and watershed scientists. The California Resources Agency and Cal EPA have quite recently developed a draft methods manual to guide the State's North Coast Watershed Assessment Program [see [http://www.ncwatershed.ca.gov/pdf/Draft NCWAP Manual](http://www.ncwatershed.ca.gov/pdf/Draft%20NCWAP%20Manual.pdf)]. UCC proposes to follow the guidance of the NCWAP manual for salmonid habitat parameters of concern: streamflow; gravel embeddedness; pool depths; macro-invertebrate fauna; stream temperatures during crucial life history seasons; adequacy and composition of riparian vegetation.

The record of the existing Codornices Creek stream gage, installed by FFC, will be evaluated to determine its adequacy for analyzing the critical watershed-wide questions. A second gaging station may be needed. Onset-type thermistors will be deployed with which to construct a picture of seasonal temperature conditions along Codornices Creek, generally, and in selected pools that might offer thermal refugia for yearling steelhead, which remain in their homestreams for a year or more.

Finally, the record of Codornices Creek's water quality, begun by FFC, will be expanded through this project to include analysis for organic constituents. Analysis for constituents like diazanon, beyond the pocketbook of volunteer groups, is crucial for determining whether the stream can be expected to consistently support the kind of macro-invertebrates needed for successful juvenile steelhead growth and survival.

This, the largest of the project's tasks, will begin with the search for access permission; existing Codornices Creek literature search; will progress to thermistor deployment and hydrologic record analysis; electro-fishing [or, if possible, less invasive fish sampling] gravel embeddedness analysis; macro-invertebrate sampling; downstream migrant trapping [March-June]; riparian vegetation analysis [supported in part by a good aerial photo record] ; the establishment of monitoring photo points [supported by GPS and digital camera records]; and then proceeding to the development of recommendations for protecting and expanding the stream's salmonid habitat, including the re-establishment of native riparian vegetation.

The target dates for the performance of the task 2 biological and chemical assessment tasks are shown in detail are shown in detail on the Budget and Project Summary sheet..

3. Task 3 will build on the initial steps of task 2. The backyard access permissions and initial stream survey will identify those streambed and bank sites requiring assessment by the project fisheries engineer. Preliminary plans for resolving migration barriers and stabilizing stream banks at the most problematic sites will be prepared and consultations with the property owners and the City [i.e., particularly regarding the City's present practice of covering its culvert openings with cyclone fencing] will be conducted to see whether more fish-friendly conditions can be created. From these preliminary plans, costs, and the results of the property owner consultations, the specific structural restoration measures will be queued up for subsequent funding requests.

4. Task 4 will build on two decades of community and neighborhood organizing work on the part of the project partners, particularly UCC, FFC, and LOCCNA. Leaders of these organizations will participate directly in shaping the campaign of information and stream stewardship education, including the creation of a project newsletter; development and maintenance of a property ownership database, indicating both access and general stream conditions; creation of a project internet website; assisting the subcontractor in posting key findings about stream conditions to the website; and maintaining continuous liaison with City officials and property owners having questions or concerns about the project.

The target dates for the performance of task 3 and task four subtasks are shown in detail on the Budget and Project Summary sheet.

2. Applicant Qualifications

Again, the Urban Creeks Council is a non-profit public benefit corporation with a proven record of grant administration and project performance. UCC will serve as the project's fiscal agent and UCC's staff will be responsible for performing project task 4 [community outreach] and will participate in the performance of task 5 [reporting], as well. UCC and its partners, including Friends of Five Creeks and the Live Oak Codornices Creek Neighborhood Association, are made up of Berkeley and Albany property owners with long histories of hard work on behalf of the stream they share. Project administration will be provided by UCC executive and environmental researcher/writer **Lisa Owens-Viani**; the outreach task will be spearheaded by LOCCNA member **Juliet Lamont**, who shall complete her Ph.D. dissertation in environmental planning this June. Both women have substantial familiarity with the neighborhoods up and down Codornices Creek.

Kier Associates will serve as the project's technical subcontractor. The project technical team will be led by long-time northern California fisheries and watershed scientist **Bill Kier**. Mr. Kier serves on the California Resources Agency/Cal EPA North Coast Watershed Assessment Program management team and is a principal contributor to NCWAP's watershed assessment methods manual, particularly those sections concerning the analysis of factors limiting salmon and steelhead production in northern California watersheds.

Responsibility for water quality sampling, analysis, and reporting will be carried by Berkeley-based hydrologist and water quality expert, **Robert Coats**, Ph.D. Mr. Kier and Dr. Coats have worked closely together over the years, most recently in an analysis of biological and physical factors limiting salmon production in the Noyo River watershed of Mendocino County, for the California Department of Forestry and Fire Protection.

The engineering assessment tasks will be performed by **Fran Borcalli**, northern California's premier fishway engineer and designer of salmon barrier modifications. A California registered civil engineer, Mr. Borcalli is well grounded in fluvial geomorphology and bank stabilization practices.

Berkeley resident, **Ms. Ingrid Morken**, a UC graduate student of CALFED advisor/Professor Matt Kondolf's, will be one of the project's principal field assistants, enabling rapid response to hydrologic events and other episodes crucial to the success of the assessment.

The Kier team is skilled in watershed data integration and analysis and has developed a watershed data management tool, the Klamath Resource Information System, or KRIS, [see www.krisweb.com] that UCC proposes at this time to use for the on-line management and dissemination to the public and CALFED agencies of Codornices Creek information.

3. Project Cost

The total cost of the 20-month project is \$250,000. \$50,000 of the project costs would be met by community volunteers, including Professor Tom Dudley and the University of California's Department of Integrative Biology; \$200,000 is requested from CALFED.

The proposed assessment will pin-point those streambed and stream corridor parameters that appear most crucial to the successful spawning of adult steelhead and to the growth and survival of their progeny. The stream and neighborhood [it could involve periodic household surveys of pesticide use, for example] monitoring program will be shaped to reflect these key parameters.

The project data, including the relevant information collected in the mobilization stages of the project, will be posted to the proposed Codornices Creek Restoration Project website. Berkeley has more than its share of internet and data management experts, including the volunteers that have helped UCC, FFC, and LOCCNA develop their current websites. Use of the KRIS watershed information integration tool will make the website contents orderly and understandable to CALFED agency specialists and Codornices Creek neighbors alike.

The neighborhood groups will continue their stream-watching and water quality sampling, only with a new steelhead restoration focus. The groups, likely through UCC, will seek funds necessary to implement the Restoration Action Plan's recommendations, which will likely extend from continued, focused stream sampling, to modification of fish-stopping structures, to construction of bank stabilization projects. Each such project will include an explicit reporting and web posting requirement.

6. Scientific Basis for the Project

Again, the origins of this project involve the first daylighting of Codornices Creek, negotiated by the City of Berkeley and a developer in the area of Eighth Street; the recovery of native vegetation on that site [the alders are currently 40 feet high]; sightings of large salmonid fish during the winter at the restored site; the sighting and recovery of young-of-the-year salmonids by fisheries scientists in the middle [BART tracks] reaches of the stream.

Berkeley and Albany's hard-working stream volunteers soon realized that it is time for a professional assessment of whether Codornices Creek could sustain its own steelhead population and, if so, whether steelhead habitat could be recovered in the upper stream reaches [e.g., above Live Oak Park] whose deep, shaded pools might serve as nursery habitat and their gravelly tail-outs might serve as spawning habitat.

This project will, indeed, develop specific watershed conservation actions. CALFED's Watershed Program offers the opportunity to test the hypothesis that Codornices Creek, once largely paved over to hide, among other things, its hideous burden of raw sewage [iwell into the 1930s], can once more host an annual run of steelhead. The early scientific indications are, that given the apparent will of the community to protect and restore the stream, it could be a steelhead producer – and a CALFED ecosystem recovery story virtually without parallel.

Among those interested in testing the hypothesis are some of northern California's most seasoned salmon watershed and water quality scientists and members of the University of California's Department of Integrative Biology.

7. Project Relationship With CALFED Objectives

The obvious connection between the project and CALFED goals and objectives are those [1] concerning the improvement and increase of aquatic habitats to support sustainable populations of diverse and valuable species and [2] the provision of good water quality for all beneficial uses.

As for the Watershed Program goals and policies, it would appear that the project is six for six:

- Facilitate and improve coordination, collaboration, and assistance among government agencies, other organizations, and local watershed groups
- Develop watershed monitoring and assessment protocols
- Support education and outreach
- Integrate Watershed Program with other CALFED program elements
- Define the relationship between watershed processes and the goals and objectives of CALFED
- Implement a strategy that will ensure support and long-term sustainability of local watershed activities

Lead agency

The lead agency for CEQA compliance purposes for this project is the Department of Fish and Game [Native Anadromous Fish and Watershed Restoration Branch, Sacramento]. Branch steelhead specialist has inspected the stream, together with National Marine Fisheries Service Bay Area streams recovery coordinator Gary Stern [see NMFS letter, enclosed] and both men will provide technical guidance to the proposed project.

Compliance with Standard Terms and Conditions

The Urban Creeks Council hereby states that it agrees to the terms and conditions for CALFED funding agreements, as set forth in Section 8, "Terms and Conditions", of the Watershed Program Proposal Solicitation Package.

Professor Dudley has taken a keen interest in the project at two levels: [1] his dissertation work, conducted in Santa Barbara County coastal watersheds, investigated the "plasticity" of coastal rainbow trout/steelhead to adopt either sea-going or land-locked life history strategies. There has been debate, none of it science-based, on whether the large salmonids in Codornices Creek, those which appear in the winter, are in fact steelhead. Professor Dudley would like to see the inquiry through, and [2] Professor Dudley is currently involved in native riparian vegetation restoration studies in northern California and has substantial expertise to offer to the restoration of Codornices Creek native vegetation. The value of the commitment by Professor Dudley, his colleagues, and graduate students to the project is conservatively estimated to be \$25,000.

A great deal of support for the project, particularly in the tasks involving neighborhood relations; getting out the newsletter; posting information to the website; arranging and facilitating neighborhood meetings about access, findings, and the recommended restoration measures; and carrying the restoration message to City Hall, has been pledged by the small army of Codornices Creek partisans that has developed over the past 20 years. The value of the neighborhood groups' pledges is estimated to be at least \$25,000.

The cost to the project of using the KRIS tool to integrate and manage project-related data and other information [e.g. then-and-now photos] will be modest inasmuch as the tool is fully developed and its use for internet information dissemination is well proven.

4. Project Technical Feasibility

Despite the preceding discussion of thermister deployment, macro-invertebrate sampling, downstream migrant trapping, gravel embeddedness analysis, barrier modification and bank stabilization engineering analysis, and information technology, all of the methods and measures proposed here have been around for some time. They have proved their value time and time again.

That said, these methods have typically been employed in wildland, not heavily urbanized, watersheds. We know of no similar watershed assessment/salmonid restoration action plan development project in any other CALFED watershed of such a thoroughly developed nature.

We believe that the 2002-03 Codornices Creek project proposed here will produce a robust and highly useful model for shaping similar assessments and restoration planning projects in other Bay Area watersheds. And we will be glad to keep CALFED management "in the loop" as we discover the best way to connect with the neighbors; the best way to communicate progress; the best way to gain support for restoration actions, etc.

5. Project Monitoring

As we indicated above, Codornices Creek water quality monitoring began, with encouragement from EPA Region 9, a couple of years ago. The monitoring and methods have varied somewhat, but the data gathered by the volunteers still provides an excellent point of departure.

Codornices Creek Watershed Restoration Action Plan Project Budget Summary									
Task Description	Labor Rate*	Hours	Total Labor	Supplies	Materials	Subcontract**	Match	CALFED	Total
1. Project administration	0.28	868	21700	2400	1987		5000	26087	31087
2. Habitat assess, rest plan						93913	24000	93913	117913
3. Engineering assess, plan						35000	5000	35000	40000
4. Community outreach	0.28	1000	40000				14000	40000	54000
5. Reports and presentatio	0.28	125	5000				2000	5000	7000
Totals:		1993	66700	2400	1987	128913	50000	200000	250000
			*Provide a benefits/salary percentage here						
			**Provide a separate itemized budget using this format for subcontracts						

Codornices Creek Watershed Restoration Action Plan Budget and Project Summary II						
Task Description		Completion date[s]	Match funds	CALFED funds	Total	
Task 1	Project Administration	Month[s]	\$\$	\$\$	\$\$	
1.1	Create project spreadsheets	1		675	675	
1.2	Prepare monthly financial, quarterly, final progress rpts	1 thru 20	2400	5000	7400	
1.3	Prepare subcontractor agreement	1		750	750	
1.4	Coord weekly w/ LOCCNA, FFC, other neighborhood	1 thru 20		4750	4750	
1.5	Maintain contractor oversight	1 thru 20		5725	5725	
1.6	Facilitate public update, findings/recs meetings	5, 10, 15, 20	1200	4950	6150	
1.7	Facilitate mtgs re w'shed info syst develop w/ grps, school	6, 10 thru 20	1400	4237	5637	
Products	Monthly project financial reports; subcontractor agreement; on-going project engagement with individual property owners and neighborhood groups; at least twelve general public briefings on project progress, findings and restoration recommendations; a community watershed information system published both on the web and as a mailer.					
Success Criteria	Bringing the subcontract work in on time/on budget; a Codornices Creek property-owner community well informed about the restoration planning progress, findings, and recommendations; property-owner, neighborhood and City Hall support for the proposed restoration actions; expanded habitat for ESA-listed salmon and steelhead; improved habitat for other aquatic species of concern; improved Codornices Cr water quality discharge to the Bay.					
Task 2	Stream Habitat Assessment, Restoration Plan	Month[s]				
1.1	Describe methods to be used to public/website/newsltr	1		1400	1400	
1.2	Gather existing habitat reports, data sets, photos, etc.	4		10900	10900	
1.3	Conduct stream survey of habitat, select study reaches	2	1000	4500	5500	
1.4	Determ pool volumes, embeddedness, collect water	5		11000	11000	
1.5	Analyze fish populations, conduct downstream trapping	4 thru 20		18500	18500	
1.6	Evaluate riparian veg, identify restoration opportunities	11	16000	4813	20813	
1.7	Analyze water quality conditions, identify remediation needs	15		7400	7400	
1.8	Draft plan for habitat improvement, including water quality	16		4900	4900	
1.9	Share prelim findings/rec's w/ agencies, peer reviewers	17		2400	2400	
1.1	Post prelim findings/recs to website, summarize in newsltr	17		1500	1500	
1.11	Meet w/ neighborhood groups re findings, recommendations	18	4000	2300	6300	
1.12	Complete habitat/water quality restoration action plan	20		4700	4700	

Products	The products will be an assemblage of data, maps, and photos concerning Codornices Cr's fish habitat quantity and quality, including analyses of the creek's riparian vegetation and its water quality during selected seasons and hydrologic events; capture of these data elements into an easily-updated computer program, including their publication on a website; draft and final plan documents setting forth findings about the quantity and quality of the watershed's fish habitat, including its riparian condition and water quality, and both general and site-specific recommendations for habitat restoration.					
Success Criteria	The success of this task will be determined first by how well the project publicity serves to ease backyard access permissions, so that all relevant reaches of the stream can be surveyed; the degree of interest and acceptance shown by the property owners and neighborhood groups; the acceptance and implementation by the City of Berkeley and other responsible jurisdictions; the degree to which the Action Plan recommendations are implemented; how much additional habitat is secured for successful, year-round steelhead habitat; how much the quality of Codornices Cr discharges to the Bay are improved.					
Task 3	Engineering Assessment, Restoration Action	Month[s]				
3.1	Survey stream for fish barriers and erosion sites	3		11000	11000	
3.2	Develop preliminary actions for barriers, stabilizing banks	11		17000	17000	
3.3	Consult w/ City, property owners re preliminary actions	15	5000	3000	8000	
3.4	Modify plans, develop perlim cost estimates	18		3000	3000	
3.5	Incorporate plans, cost estimates into Action Plan	19		1000	1000	
Products	Map of the location of fish barriers; preliminary plans for modifying the identified barriers; consultation w/ barrier-location property owners [including City of Berkeley]; preliminary agreement w/ property owners on approach/design for barrier modification; preliminary cost determination for each barrier modification.					
Success Criteria	Number of property owner agreements reached; identification of funds for barrier modification; completed modification projects; expansion of steelhead habitat in Codornices Cr; community involvement in restoring, maintaining the creek's fish habitat.					
Task 4	Community outreach, information dissemination	Month[s]				
4.1	Create and maintain web and mailer project information	2	1000	15000	16000	
4.2	Facilitate access to private prop for assessment team	1 thru 20	9000	13000	22000	
4.3	Maintain project liaison w/ property owners and City Hall	1 thru 20	4000	12000	16000	
Products	A Codornices Creek Watershed Restoration Action Plan website; a Codornices Cr Action Plan newsletter; watershed assessment products [water quality data; salmon and steelhead habitat evaluation data, engineering analysis of fish barriers information, etc.] and general neighborhood information pertinent to Codornices Cr and its restoration opportunities published on the website and in the newsletter; private property access approvals; project findings/recommendation briefings for local commissions and elected officials.					

Success Criteria	Private property owner agreements to modify/improve salmon and steelhead habitat in their backyards; City Hall support [durable policy actions] for private property and city street [culverts, etc.] modifications to expand salmon and steelhead habitat; remediation of fish barriers; expansion of habitat; increase of steelhead. improvement of Codornices Cr discharges to the Bay.				
Task 5	Project Reports and Presentations	Month[s]			
5.1	Pres re w'shed assess prod's; data mgt to CALFED sci	CALFED sci conf		600	600
5.2	Rpt project progress to Berkeley, Albany city councils	16	2000	3200	3200
5.3	Pres project accomplish's to interested CALFED cmtes	16-20		1200	1200
Products	Reports of watershed assessment methods employed; data findings; results of property owner relationships/stream modification agreement-making; community information dissemination methods employed/results; City Hall support-building experience.				
Success Criteria	We believe we are going to adopt and demonstrate watershed assessment methods particularly well-suited to the Bay-Delta's urban streams. There are many of these streams around the nine-county area that have potential for restoration of key aquatic resources, including ESA-listed salmon and steelhead. We believe we are going to demonstrate effective means for working with property owners to secure their interest in improving aquatic habitat on their properties. We believe we are going to demonstrate improved methods for disseminating information to urban watershed communities. Taken together, we believe we will create a model watershed assessment/restoration action planning process that will be highly transportable to other Bay-Delta urban stream venues.				

Codornices Creek Watershed Restoration Action Plan Subcontractor Budget							
Professional services							Cost
		hourly rate	estimated hours				
			Task 2	Task 3	Task 4		
Sr fisheries ecologist, project lead		85	145		52		16745
Senior watershed scientist		75	150		40		14250
Fisheries engineer, civil		105		260	30		30450
Fisheries biologist		65	105				6825
GIS/data management specialist		45	96		225		20250
Hydrologist		85		45			3825
Field assistant		35	580	250			20300
Total professional services costs							112645
Direct costs							
Travel and transportation			650	950	400		1050
Supplies			1739	430			1739
Materials			1285	650			1285
Phone, faxes, copies			375	150	100		475
Total direct costs							4549
Fixed fee @ 10%							11719.4
Total subcontract budget							128913.4